

Abstract

A method and apparatus is provided for using optical time-domain reflectometry (OTDR) with a WDM transmission system that includes a plurality of terminals interconnected by at least two pairs of unidirectional optical transmission paths each of which has at least one repeater therein. The method begins by transmitting an optical probe signal from a first OTDR unit associated with a first terminal into the repeater over a first optical path in a first of the at least two pairs of unidirectional optical transmission paths. The first OTDR unit receives a first returned OTDR signal over a second optical path in the first optical path pair. The first OTDR signal contains status information concerning the first optical path in the first optical path pair. The optical probe signal from the first optical path in the first optical path pair is coupled to a second optical path in the second optical path pair. The first optical path in the first optical path pair supports optical signals traveling in a direction opposite to optical signals supported by the second optical path in the second optical path pair. A second returned OTDR signal is received over a first optical path in the second optical path pair in which status information concerning the second optical path in the second optical path pair is embodied. The second returned OTDR signal traverses a repeater located in the second optical path pair. The second returned OTDR signal is coupled from the first optical path in the second optical path pair to the second optical path in the first optical path pair so that the second OTDR signal is returned to the first OTDR unit. The first optical path in the second optical path pair supports optical signals traveling in a direction opposite to optical signals supported by the second optical path in the first optical path pair.